

App. No. 09/560,269  
Amendment dated August 31, 2005  
Reply to final Office Action of July 14, 2005

**Listing of claims:**

1. (Currently amended) A computer-implemented method for collecting information relating to execution of an application, the method being executed on a computer, the method comprising:

determining a set of probe locations in the application, wherein the set of probe locations comprises a probe location pair that produces redundant information;

eliminating one member of the probe location pair, wherein the eliminated member probe location pair comprises one of the following pairs:

a call to function probe location in a calling function when the calling function calls to and an enter function probe location in a called function, wherein the called function is within a current module of the calling function, and

a return from function probe location in the calling function when the calling function calls to and an exit function probe location in the called function, wherein the called function is within the current module of the calling function; and

inserting probes at the remaining probe locations in the application such that data collected relating to the execution of the application produces non-redundant information.

Claims 2-3 (Cancelled)

4. (Currently amended) The method of claim 1, further comprising:  
identifying a first location within the application at which a function call directs execution of the application to a second location outside of the a current module; and  
inserting a first probe before the identified first location and a second probe after the identified first location.

5. (Original) The method of claim 4, wherein the first probe is configured to collect an address of a first function in which the identified first location is located, an address of a second function in which the second location is located, a first stack pointer, and a first time

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indicator, and the second probe is configured to collect the address of the second function, a second stack pointer, and a second time indicator.

6. (Previously presented) The method of claim 1, further comprising:  
identifying a first location within the calling function at which execution of the application is directed to the called function having an exit point at which execution of the application is directed to a second location outside of the calling function; and  
inserting a first probe before the first location and a second probe after the second location.

7. (Original) The method of claim 6, wherein the first probe is configured to collect an address of the calling function, an address of the called function, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the called function, a second stack pointer, and a second time indicator.

8. (Original) The method of claim 1, further comprising:  
identifying a block of code to which execution of the application is directed upon occurrence of an error; and  
inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code.

9. (Original) The method of claim 8, wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

10. (Original) The method of claim 1, further comprising using the inserted probes to collect the information relating to the execution of the application.

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11. (Original) The method of claim 10, further comprising analyzing the collected information.

12. (Currently amended) A computer-implemented method for collecting information relating to execution of an application, the method being executed on a computer, the method comprising:

determining entry and exit points of a called function that is called from a calling function in the application;

determining a set of probe locations in the application, wherein the set of probe locations comprises probe location pairs that produce redundant information;

eliminating one member of each probe location pair, wherein the eliminated member ~~each probe location pair~~ comprises one of the following pairs:

a call to function probe location in the calling function when the calling function calls to ~~and an enter function probe location at the entry point in~~ the called function, wherein the called function is within a current module of the calling function, and

a return from function probe location in the called function when the calling function calls to ~~and an exit function probe location at the exit point in~~ the called function, wherein the called function is within the current module of the calling function;

inserting probes at the remaining probe locations in the application;

collecting non-redundant information relating to the execution of the application using the inserted probes; and

analyzing the collected information.

13. (Currently amended) The method of claim 12, further comprising:  
identifying a first location within the application at which a function call directs execution of the application to a second location outside of the a current module; and  
inserting a first probe before the identified first location and a second probe after the identified first location,

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wherein the first probe is configured to collect an address of a first function in which the identified first location is located, an address of a second function in which the second location is located, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the second function, a second stack pointer, and a second time indicator.

14. (Original) The method of claim 12, further comprising:

identifying a first location within a calling function at which execution of the application is directed to a called function having an exit point at which execution of the application is directed to a second location outside of the calling function; and

inserting a first probe before the first location and a second probe after the second location,

wherein the first probe is configured to collect an address of the calling function, an address of the called function, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the called function, a second stack pointer, and a second time indicator.

15. (Original) The method of claim 12, further comprising:

identifying a block of code to which execution of the application is directed upon occurrence of an error; and

inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code,

wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

16. (Currently amended) A tangible computer-readable medium having an application including computer-executable instructions, the computer-executable instructions comprising for:

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determining a set of probe locations in the application, wherein the set of probe locations includes a probe location pair that produces redundant information;

eliminating one member of the probe location pair, wherein the eliminated member probe location pair comprises one of the following pairs:

a call to function probe location in a calling function when the calling function calls to and an ~~enter function probe location~~ in a called function, wherein the called function is within a current module of the calling function, and

a return from function probe location in the calling function when the calling function calls to and an ~~exit function probe location~~ in the called function, wherein the called function is within the current module of the calling function; and

inserting probes at the remaining probe locations in the application such that data collected relating to the execution of the application produces non-redundant information.

Claims 17-18 (Cancelled)

19. (Original) The computer-readable medium of claim 16, having further computer-executable instructions for:

identifying a first location within the application at which a function call directs execution of the application to a second location outside of a current module; and

inserting a first probe before the identified first location and a second probe after the identified first location.

20. (Original) The computer-readable medium of claim 19, wherein the first probe is configured to collect an address of a first function in which the identified first location is located, an address of a second function in which the second location is located, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the second function, a second stack pointer, and a second time indicator.

21. (Previously presented) The computer-readable medium of claim 16, having further computer-executable instructions for:

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identifying a first location within the calling function at which execution of the application is directed to the called function having an exit point at which execution of the application is directed to a second location outside of the calling function; and  
inserting a first probe before the first location and a second probe after the second location.

22. (Original) The computer-readable medium of claim 21, wherein the first probe is configured to collect an address of the calling function, an address of the called function, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the called function, a second stack pointer, and a second time indicator.

23. (Original) The computer-readable medium of claim 16, having further computer-executable instructions for:  
identifying a block of code to which execution of the application is directed upon occurrence of an error; and  
inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code.

24. (Original) The computer-readable medium of claim 23, wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

25. (Original) The computer-readable medium of claim 16, having further computer-executable instructions for using the inserted probes to collect the information relating to the execution of the application.

26. (Original) The computer-readable medium of claim 25, having further computer-executable instructions for analyzing the collected information.

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27. (Currently amended) A tangible computer-readable medium having an application including computer-executable instructions, the computer-executable instructions comprising for:

determining entry and exit points of a called function that is called from a calling function in the application;

determining a set of probe locations in the application, wherein the set of probe locations comprises a probe location pair ~~pairs~~ that ~~produces produce~~ redundant information;

eliminating one member of the each probe location pair, wherein the eliminated member each probe location pair comprises one of the following pairs:

a call to function probe location in a calling function when the calling function calls to and an enter function probe location at the entry point in the a called function, wherein the called function is within a current module of the calling function, and

a return from function probe location in the calling called function when the calling function calls to and an exit function probe location at the exit point in the called function, wherein the called function is within the current module of the calling function; and

inserting probes at the remaining probe locations in the application;

collecting non-redundant information relating to the execution of the application using the inserted probes; and

analyzing the collected information.

28. (Currently amended) The computer-readable medium of claim 27, having further computer-executable instructions for:

identifying a first location within the application at which a function call directs execution of the application to a second location outside of the a current module; and

inserting a first probe before the identified first location and a second probe after the identified first location,

wherein the first probe is configured to collect an address of a first function in which the identified first location is located, an address of a second function in which the second

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location is located, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the second function, a second stack pointer, and a second time indicator.

29. (Previously presented) The computer-readable medium of claim 27, having further computer-executable instructions for:

identifying a first location within the calling function at which execution of the application is directed to the called function having an exit point at which execution of the application is directed to a second location outside of the calling function; and

inserting a first probe before the first location and a second probe after the second location,

wherein the first probe is configured to collect an address of the calling function, an address of the called function, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the called function, a second stack pointer, and a second time indicator.

30. (Original) The computer-readable medium of claim 27, having further computer-executable instructions for:

identifying a block of code to which execution of the application is directed upon occurrence of an error; and

inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code,

wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

31. (Currently amended) A computer system comprising a processor that is arranged  
arrangement configured to execute an application including computer-executable instructions,  
the computer-executable instructions comprising for:



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determining a set of probe locations in the application, wherein the set of probe locations includes a probe location pair that produces redundant information;

eliminating one member of the probe location pair, wherein the eliminated member probe location pair comprises one of the following pairs:

a call to function probe location in a calling function when the calling function calls to ~~and an enter function probe location in a called function, wherein the called function is within a current module of the calling function,~~ and

a return from function probe location in the calling function when the calling function calls to ~~and an exit function probe location in the called function, wherein the called function is within the current module of the calling function;~~ and

inserting probes at the remaining probe locations in the application such that data collected relating to the execution of the application produces non-redundant information.

Claims 32-33 (Cancelled)

34. (Currently amended) The computer system arrangement of claim 31, further configured to execute computer-executable instructions for:

identifying a first location within the application at which a function call directs execution of the application to a second location outside of the a current module; and

inserting a first probe before the identified first location and a second probe after the identified first location.

35. (Currently amended) The computer system arrangement of claim 34, wherein the first probe is configured to collect an address of a first function in which the identified first location is located, an address of a second function in which the second location is located, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the second function, a second stack pointer, and a second time indicator.

36. (Currently amended) The computer system arrangement of claim 31, further configured to execute computer-executable instructions for:

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identifying a first location within the calling function at which execution of the application is directed to the called function having an exit point at which execution of the application is directed to a second location outside of the calling function; and  
inserting a first probe before the first location and a second probe after the second location.

37. (Currently amended) The computer system arrangement of claim 36, wherein the first probe is configured to collect an address of the calling function, an address of the called function, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the called function, a second stack pointer, and a second time indicator.

38. (Currently amended) The computer system arrangement of claim 31, further configured to execute computer-executable instructions for:  
identifying a block of code to which execution of the application is directed upon occurrence of an error; and  
inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code.

39. (Currently amended) The computer system arrangement of claim 38, wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

40. (Currently amended) The computer system arrangement of claim 31, further configured to execute computer-executable instructions for using the inserted probes to collect the information relating to the execution of the application.

41. (Currently amended) The computer system arrangement of claim 40, further configured to execute computer-executable instructions for analyzing the collected information.

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42. (Currently amended) A computer system comprising a processor that is arranged  
arrangement configured to execute an application including computer-executable instructions,  
the computer-executable instructions comprising for:

determining entry and exit points of a called function that is called from a calling  
function in;

determining a set of probe locations in the application, wherein the set of probe  
locations comprises a probe location pair pairs that produces produce redundant information;

eliminating one member of the each probe location pair, wherein the eliminated  
member each probe location pair comprises one of the following pairs:

a call to function probe location in the calling function when the calling  
function calls to and an enter-function probe location at the entry point in the called  
function, wherein the called function is within a current module of the calling function,  
and

a return from function probe location in the calling called function when  
the calling function calls to and an exit-function probe location at the exit point in the  
called function, wherein the called function is within the current module of the calling  
function;

inserting probes at the remaining probe locations in the application;  
collecting non-redundant information relating to the execution of the application  
using the inserted probes; and  
analyzing the collected information.

43. (Currently amended) The computer system arrangement of claim 42, further  
configured to execute computer-executable instructions for:

identifying a first location within the application at which a function call directs  
execution of the application to a second location outside of the a current module; and

inserting a first probe before the identified first location and a second probe after  
the identified first location,

wherein the first probe is configured to collect an address of a first function in  
which the identified first location is located, an address of a second function in which the second

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location is located, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the second function, a second stack pointer, and a second time indicator.

44. (Currently amended) The computer system ~~arrangement~~ of claim 42, further configured to execute computer-executable instructions for:

identifying a first location within the calling function at which execution of the application is directed to the called function having an exit point at which execution of the application is directed to a second location outside of the calling function; and

inserting a first probe before the first location and a second probe after the second location,

wherein the first probe is configured to collect an address of the calling function, an address of the called function, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the called function, a second stack pointer, and a second time indicator.

45. (Currently amended) The computer system ~~arrangement~~ of claim 42, further configured to execute computer-executable instructions for:

identifying a block of code to which execution of the application is directed upon occurrence of an error; and

inserting a first probe at a beginning of the identified block of code and a second probe at an end of the identified block of code,

wherein the first probe is configured to collect an address of the block of code, a first stack pointer, and a first time indicator, and the second probe is configured to collect the address of the block of code, a second stack pointer, and a second time indicator.

Claims 46-51 (Cancelled)